Vasconcellos Neto, J. 1991. Interactions between ithomiine butterflies and Solanaceae: feeding strategies and reproductive strategies. IN: P. W. Price, T. M. Lewinsohn, G. W. Fernandes, & W. W. Benson (eds.), Plant-animal interactions: evolutionary ecology in tropical and temperate regions. John Wiley & Sons, Inc. pp. 291-313.

P.J. DeVries. *Dept. of Zoology, University of Texas, Austin, Texas 78712 and Center for Conservation Biology, Stanford University, Stanford, California 94305*

Manifesto on Conservation

Editor's note:

The Lepidopterological Society of Japan held its first seminar on the conservation of butterflies in June 1990. The conveners drafted, and the members present passed, a resolution on conservation. This resolution was provided by Prof. Atuhiro Sibatani and is published in its entirety below.

This action by the Japanese Society is a highly significant event. It makes a strong statement on behalf of a large grassroots body of both professional and amateur biologist members in a leading industrialized nation. It is a particularly remarkable document given its origins in a country heretofore notorious for neglecting environmental concerns in favor of immediate economic benefit. The thrust of the resolution correctly emphasizes the need to protect total biodiversity while minimizing the importance of individual species. We publish this as a model statement for many circumstances.

Manifesto

A statement developed at the first seminar on *The Conservation of Butterflies as a Part of Nature*, 2-3 June 1990, Osaka, co-sponsored by the Lepidopterological Society of Japan and the Osaka Museum of Natural History.

Participants at the first seminar of the Lepidopterological Society of Japan (LSJ) have confirmed the following statements.

- The first cause of nature conservation shall not be the protection from extinction of individual species, but preservation of diversity in biological communities and ecosystems.
- This means to maintain, along with persistent diversity of individual gene pools and species, the integrity of systems which may well entail local alterations of these systems.
- Butterflies are pertinent bioindicators of the terrestrial ecosystem. Hence, the conservation of butterflies implies conservation of the entire ecosystem.
- In order to fulfill the objective of nature conservation, we are responsible and willing to work responsibly, not only to maintain nature's biodiversity, but also to restore this diversity in Japan as well as the world at large, under cooperation with other bodies and using butterflies as indicators.

Implications and further explanation

I. The Position of the LSJ

A. Since 1965, LSJ has engaged in activities for conservation of the Japanese Lepidoptera (mainly butterflies) by setting up the Committee for Study of Nature Conservation Issues (since 1975 the Committee for Nature Conservation) and by issuing occasional announcements and appeals. The society also edited and published *Decline and Conservation of Butterflies in Japan I* (1989/90). With this publication, LSJ demonstrated in advance of other national bodies concerned with insects, its interests in and responsibilities for the conservation of butterflies and shed light on some of the problems of butterfly conservation. We must admit, however, that LSJ has lagged behind related organizations in Europe and America. Our failure to establish reliable principles about the possible relationship between butterfly conservation and collecting as well as scientific studies thereof, may account for this lag.

B. Fortunately, along with the growth of scientists' concerns in problems of both domestic and foreign nature conservation, we have witnessed significant progress in the theory of butterfly conservation which has profoundly extended our understanding of the larger issues. We now wish to present, on the basis of our accumulated experience and the recent theoretical advances, the following plans for concrete action:

1. To hold, for several years, and every year if feasible, seminars, international symposia, etc. on conservation of butterflies in order to examine general theories of conservation as well as concrete means to counteract decline and extinction in individual cases, and also to work out guidelines for actions and practice.

2. To compose guidelines for butterfly collecting and investigation. Until its completion the relevant clauses in the corresponding codes of the Royal Entomological Society (U.K., 1968) and the Lepidopterists' Society (U.S.A., 1982) should be consulted for ethical norms.

3. To compile, as soon as possible, estimations of the danger and threat of extinction for all the butterfly species of Japan and suggestions for concrete actions to be taken for their protection and, where applicable, eventual local reestablishments.

C. Although opinions expressed herein were supported at the first seminar of LSJ, they do not necessarily represent opinions of the Society as a whole. Endeavors will be made to have this manifesto endorsed by the Society.

II. Scientific Understanding of Butterfly Conservation.

A. Butterflies have a high reproductive capacity, generally undergoing large fluctuations of population size in nature, but being capable of recovery from serious declines of population density. Ordinary, disciplined, modest collecting does not threaten sustained survival of any butterfly populations unless their habitats are destroyed or disturbed for other reasons.

B. The concept that butterflies can be used as significant indicator organisms for terrestrial ecosystems has been adopted in many countries. We also agree with this attitude. Today butterfly conservation does not simply imply butterfly preservation alone, but has become an indispensable means to maintain the persisting diversity of terrestrial ecosystems at large.

C. The decline and extinction of many butterfly populations, as witnessed in recent years in Japan, has largely been the consequence of the loss of habitat

caused by the recent rapid and profound structural alteration of industry and the extensive development which occurred in parallel with it. Fortunately, there has been no record of extinction of butterfly taxa (species and subspecies) in Japan yet. However, danger of complete extinction may be imminent for some taxa.

D. At present, the most endangered species are those which inhabit rural modified environments closely situated to human residences.

E. Because of these circumstances as well as for the reasons described in C, we wish to point out that the policy of butterfly conservation as adopted by the state and local governments in Japan and many other countries, comprising prohibition of collecting at either specific or population level, with occasional inclusion of protection of the habitat, has not properly served the newly defined purpose of conserving the persistent diversity of butterflies or ecosystems.

F. Butterflies are components of diverse ecosystems. Reasons for their decline and extinction are complex and far from uniform, varying from species to species and even from population to population within one species. Protecting butterflies from extinction accordingly requires scientific analyses at various levels, for which continued training of young butterfly workers, capable of undertaking scientific surveys in the field is needed, as well as education of the general public.

III. Nature Conservation in General

A. In natural ecosystems species diversity is generated and maintained by interactions among numerous and complex components. While individual ecosystems give rise to persistent diversity, they undergo perpetual alterations to their component species and the size of their populations. Moreover, it is these alterations which provide the mechanism enabling the maintenance of diversity. For this reason, the temporary conservation of a particular species within a small area is sometimes incompatible with securing species diversity in an ecosystem. Since ecosystems are usually undergoing a process of perpetual change and transition, human interference is necessary to keep them "stable" or constant.

B. Traditional agri- and silviculture and natural disasters are two main external causes of "sound" changes in ecosystems. They do this by interrupting vegetational succession at various stages resulting in rejuvenation, therein guaranteeing species diversity. Thus, before the advent of modern civilization, traditional society and culture were integral parts of the mechanism by which diversity of the ecosystem was perpetuated. Today the situation is completely changed. New industrial structures have either destroyed the natural environment or affected its simplification with the calamitous loss of factors which generated the previously extant diversity. The recent impoverishment of the butterfly fauna reflects this very well.

C. A highly desirable conservation policy would not consist of promoting a list of species whose collection is formally prohibited, but would aim at providing safety for *all* the butterfly species occurring in individual regions and localities. However, since natural environment is in constant transition, such a policy should not imply an unnatural fossilization of the current situation, but should aim at instituting both natural and cultural mechanisms to enhance biodiversity through modest man-made (or human-sized) interference with the system. The usual practice of environment impact assessments which refer to the *status quo* as a criterion for preservation, does not serve the objective of nature conservation. Official bodies and grass-roots movements active in nature conservation are at a turning point where they should reappraise the nature of the problems they are faced with in order to achieve the goals to which they aspire.